# INDEX


Page

Acetaldehyde—
emanations from fruit, absorption and oxidation, experiments ... 498–499
oxidation with ceric sulphate, experiments ... 496–498
Aeration, effect on causal agent of tobacco brown root rot ... 852–855
Alkaline salts, influence on bactericidal efficiency of crystal violet ... 945
*Alternaria* spp., elimination from germinating seed peas, tests ... 400–422
Ammonia content of soils, relation to toxicity of chemical herbicides ... 640–671
ANDREWS, JOHN S.:
Experimental Trichostrongylosis in Sheep and Goats ... 761–770
Life History of the Nematode *Cooperia curticei*, and Development of Resistance in Sheep ... 771–785
Animals, experimental, long bones, weight and composition, bilateral variation. Chas. E. Weakley, Jr., and R. B. Dustman ... 711–716
Apple—
adventive—
root primordia, presence, development, and appearance ... 798, 801
shoot primordia, development ... 798–802
cuttings, vegetative responses, anatomical studies ... 796–802
root, primary, anatomy ... 797
roots, 1-year, root and shoot primordia, anatomical studies. E. A. Siegler and J. J. Bowman ... 795–803
seedlings, vegetative responses, anatomical studies ... 796–802
Apples—
Golden Delicious, disease development in storage, relation to emanation of volatiles ... 501–502
stored, volatile products liberated from, estimation method ... 493–502
volatile emanations, oxidizing solution and substrate, selection and standardization ... 495–496
ARK, P. A., TOMPKINS, C. M., TUCKER, C. M., and MIDDLETON, J. T.: Soft Rot of Pumpkin and Watermelon Fruits Caused by *Pythium ultimum* ... 461–475
Armyworm, southern—
ingestion of pyrethrum and its inactivation after and during incubation with tissues. P. A. Woke ... 289–295
larvae of, ingestion of pyrethrum, experiments ... 289–294
toxicity of pyrethrum to, studies ... 289–295
Arsenic, toxicity in soils, relation of nutrients to. A. S. Crafts ... 637–671
Artichoke tops, gas production from, by anaerobic microbial decomposition, experiments ... 273–281, 283–286
ASMUNDSON, V. S.: Relative Influence of the Various Factors That Affect Egg Production of Turkeys During Different Parts of the First Laying Year ... 747–754
*Aspergillus niger*—
growth—
effect of nitrogen, data ... 722–723, 726–728, 730
in culture, nitrogen partition ... 724–725, 728–731
in optimum nutrient solutions, determinations ... 717–722, 726–731
nitrogen—
content and relative yield at different sucrose levels, determinations ... 725–726
utilization, estimation by optimum solutions as physiological reference standards. Robert A. Steinberg and John D. Bowling ... 717–732

Page

ATKESON, F. W., WHITNAH, C. H., PETERSON, W. J., and CAVE, H. W.: Carotene Balance and Blood-Carotene Levels in Heifers and Lactating Dairy Cows, and Their Relation to the Production of Off-Flavor Milk ... 343–355

Bacteria, toxic, susceptibility to aniline dyes, tests ... 941–946
Bactericidal efficiency of certain aniline dyes. F. W. Tilley ... 941–946
BARRONS, KEITH C.: Studies of the Nature of Root Knot Resistance ... 263–271
BATEN, W. D., and MAHONEY, CHARLES H.: The Use of the Analysis of Covariance and Its Limitation in the Adjustment of Yields Based Upon Stand Irregularities ... 317–328
BEACH, B. A., and HASTINGS, E. G.: A Further Study of the Production of Milk of Abnormal Composition by Cows Free From Udder Streptococci ... 543–556
Bean—
plants, transpiration, effect of bordeaux mixture on, greenhouse experiments ... 423–442
Refugee, yields, study by analysis of covariance ... 326–327
varieties, susceptibility to root knot disease, studies ... 263–271
BECKER, CATHARINE L., KRANTZ, F. A., and FINEMAN, Z. M.: Incidence and Inheritance of Pollen Sterility in the Potato ... 593–601
Beet roots, shape, influence of various factors. Ross C. Thompson ... 733–745
Beets. *See* Sugar beets.
Blood-carotene levels and carotene balance in heifers and lactating dairy cows, and their relation to production of off-flavor milk. C. H. Whitnah, W. J. Peterson, F. W. Atkeson, and H. W. Cave ... 343–355
BOLIN, DONALD W., and SCHROEDER, WILBUR: The Calcium-Phosphorus Ratio of the Skins of Canning Peas and Its Relation to Maturity ... 631–636
Bones, long, of experimental animals, weight and composition, bilateral variation. Chas. E. Weakley, Jr., and R. B. Dustman ... 711–716
Borax, toxicity in soils, relation of nutrients to. A. S. Crafts ... 637–671
Bordeaux mixture—
effect on—
bean and potato transpiration, factors affecting ... 425–440
transpiration. James G. Horsfall and A. L. Harrison ... 423–443
hydrogen-ion concentration, relation to dwarfing of cucurbits ... 921–924
injury to cucurbits, experiments ... 911–926
use for spraying cucurbits, dwarfing effects. James G. Horsfall, G. E. R. Hervey, and F. R. Suit ... 911–927
various elements of, effect on transpiration. James G. Horsfall and A. L. Harrison ... 423–443
Bordeaux transpiration—
greenhouse investigations ... 423–442
hypothesis ... 440–441
*Bouteloua eriopoda*, important range grass, carotene content, monthly variation. W. E. Watkins ... 695–699
Bovine mastitis. *See* Mastitis, bovine.
BOWLING, JOHN D., and STEINBERG, ROBERT A.: Optimum Solutions as Physiological Reference Standards in Estimating Nitrogen Utilization by *Aspergillus niger* ... 717–732

Page

BOWMAN, J. J., and SIEGLER, E. A.: Anatomical Studies of Root and Shoot Primordia in 1-Year Apple Roots ..... 795-803
Bunchgrass, blue, composition, seasonal variation ..... 603-615

Calcium—
absorption by corn plant, effect of fertilizer treatment ..... 484-485
content of pig's blood, relation to vitamin D deficiency, experiments ..... 929-939
from two sources, lime and superphosphate, foliar diagnosis study of influence. Walter Thomas and Warren B. Mack .. 685-693
phosphorus ratio—
in bluebunch fescue, determination .. 611, 613, 615
of skins of canning peas and its relation to maturity. Donald W. Bolin and Wilbur Schroeder ..... 631-636
reciprocal effects with potassium on maize. 692
California—
radish mosaic disease. C. M. Tompkins. 119-130
San Gabriel Mountains—
chaparral, annual accumulation and creep of litter and other surface materials. Joseph Kittredge, Jr. ..... 537-541
description of chaparral ..... 522
forest floor of chaparral. Joseph Kittredge, Jr. ..... 521-535
Canker of *Cupressus* induced by *Coryneum cardinale* n. sp. Willis W. Wagener ..... 1-46
Carotene—
balance and blood-carotene levels in heifers and lactating dairy cows, and their relation to production of off-flavor milk. C. H. Whitnah, W. J. Peterson, F. W. Atkeson, and H. W. Cave ..... 343-355
content of two important range grasses, *Sporobolus flexuosus* and *Bouteloua eriopoda*, monthly variation. W. E. Watkins. 695-699
excretion by cows, relation to intake and to concentration in blood serum, study .... 343-353
CAVE, H. W., WHITNAH, C. H., PETERSON, W. J., and ATKESON, F. W.: Carotene Balance and Blood-Carotene Levels in Heifers and Lactating Dairy Cows, and Their Relation to the Production of Off-Flavor Milk ..... 343-355
Ceric sulphate, use for oxidation of acetaldehyde ..... 496-498
Chaparral—
forest floor of, in San Gabriel Mountains, Calif. Joseph Kittredge, Jr. ..... 521-535
San Gabriel Mountains, California—
annual accumulation and creep of litter and other surface materials. Joseph Kittredge, Jr. ..... 537-541
description ..... 522
Chemicals—
effect on causal agent of tobacco brown root rot, experiments ..... 855-856
pure nonvolatile dilutions, efficacy in destroying saprophytes on germinating seed peas, tests ..... 404-405, 419-420
Chicken, long bones, weight and composition, bilateral variation ..... 711-716
Chickens—
breeding for study of eggshell thickness .... 384-385
White Leghorn, inheritance of eggshell thickness, experiments ..... 383-396
*See also* Fowl; Hen; Pullets.
Chicks—
resistance to vitamin $B_1$ deficiency, comparison of breeds ..... 307-316
*See also* Fowl; Hen; Pullets.
Chlorate, toxicity in soils, relation of nutrients to. A. S. Crafts ..... 637-671
Chromosome—
behavior in *Gossypium*, studies ..... 239-258
numbers in *Lactuca* spp., effect on hybridization ..... 299-306
CLARKE, I. D., FREY, R. W., and HYLAND, H. L.: Seasonal Variations in Tannin Content of *Lespedeza sericea* ..... 131-139
CONE, J. FRANK: *Pseudomonas aeruginosa* in Bovine Mastitis ..... 141-147
CONRAD, R. M., and WARREN, D. C.: Growth of the Hen's Ovum ..... 875-893

*Cooperia curticei*— Page
life history ..... 772-778
nematode, life history, and development of resistance in sheep. John S. Andrews. 771-785
superinfection, development of acquired resistance in sheep ..... 778-782

Copper—
compounds, efficacy in destroying saprophytes on germinating seed peas, tests .. 399, 406-409, 411-413, 417-418, 419-420
effect on growth of cucurbits ..... 913-915, 919-926
in bordeaux mixtures, effect on bean and tomato transpiration, studies ... 431, 433-435, 441

Corn—
fertilizer treatment, examination by foliar diagnosis ..... 478-491
nutrition—
foliar diagnosis study ..... 685-693
intensities, effect of fertilizer treatment .. 485
sweet, yield adjustment by use of analysis of covariance ..... 317-321

Cornstalk flour, gas production from, by anaerobic microbial decomposition, experiments ..... 273-280, 281-282, 283-286

Cornstalks, gas production from, by anaerobic microbial decomposition, experiments. 273-280, 281-282, 283-286

Corpora lutea, number, relation to mortality of sheep fetuses ..... 574-575, 577

*Coryneum cardinale* n. sp.—
cause of canker of *Cupressus*. Willis W. Wagener ..... 1-46
chilling, effects on resumption of growth ... 18-19
comparison with other species ..... 9-12
control problems ..... 40-42
cultural characteristics ..... 14-15
dissemination and status as a natural saprophyte ..... 22-27
infection of Monterey cypress ..... 27-30
rate of spread in Monterey cypress ..... 31-34
spores, production, germination, and longevity ..... 19-22
taxonomic position ..... 13-14
technical description and specimens examined ..... 8-9
*Coryneum* sp., cause of disease in Monterey cypress ..... 1

Cotton—
fabrics, labeling for fiber content, analyses. 896-902
fusarium wilt, relation to soil moisture. W. H. Tharp and V. H. Young. ..... 47-61
ginning, rupture of seed coat, relation of structure of chalazal portion to. Norma L. Pearson ..... 865-873
hybrid of two American wild species, morphology. Thomas E. Kearney and Irma E. Webber ..... 445-459
root rot fungus—
growth, effect of moisture and temperature. C. H. Rogers ..... 701-709
growth measurements ..... 704
moisture studies ..... 701-702
temperature studies ..... 702-704
wild species, two American, morphology of, and of their hybrid. Thomas H. Kearney and Irma E. Webber ..... 445-459
See also *Gossypium*.

Cottonseed—
chalazal end, structure ..... 869-872
coat—
chalazal portion, relation of structure to rupture during ginning. Norma L. Pearson ..... 865-873
meal, vitamin G content, studies ..... 787-794
structure and development ..... 866-869

Covariance, analysis, use and its limitation in adjustment of yields based upon stand irregularities. Charles H. Mahoney and W. D. Baten ..... 317-328

Cows—
abnormality in lactation periods, influence on milk production ..... 553-554
anatomy—
post-mortem data, methods of obtaining. 206-208
relation to conformation, experiments ... 199-234
variation in, post-mortem data .. 210-212, 213-214

Cows—Continued. Page
carotene excretion, relation to intake and to concentration of carotene in blood serum, study 343-353
conformation—
and anatomy, relation between, by breeds 229-230
ante-mortem data, methods of obtaining 204-206
relation to anatomy, experiments 199-234
variation in, ante-mortem data 210-213
dairy, lactating, carotene balance and blood-carotene levels and their relation to production of off-flavor milk. C. H. Whitnah, W. J. Peterson, F. W. Atkeson, and H. W. Cave 343-355
free from udder streptococci, production of milk of abnormal composition, further study. E. G. Hastings and B. A. Beach 543-556
lactation periods, abnormality studies 546-556
mastitis, outbreak at Beltsville, Md., studies 141-146
producing ability unknown, relation between conformation and anatomy. W. W. Swett and R. R. Graves 199-235
CRAFTS, A. S.: The Relation of Nutrients to Toxicity of Arsenic, Borax, and Chlorate in Soils 637-671
Crops—
stand irregularities, use of analysis of covariance and its limitation in adjustment of yields based upon 317-328
yields, analysis of covariance, use and limitation in adjustment 317-328
CROSIER, WILLARD, and PATRICK, STEWART: Chemical Elimination of Saprophytes During Laboratory Germination of Seed Peas 397-422
Crucifer—
mosaic viruses, comparison with radish mosaic virus 127-129
viruses, relation to mosaic viruses of annual stock 75
*Ctenium aromaticum*, susceptibility to *Dothichloë* infection 951-954
Cucumbers, dwarfing—
effects of bordeaux sprays 911-926
relation to hydrogen-ion concentration of bordeaux mixture 915, 921-925
Cucurbits, spraying with bordeaux mixture, dwarfing effect. James G. Horsfall, G. E. R. Hervey, and R. F. Suit 911-927
Culture conditions, influence upon growth and development of *Dictyostelium discoideum*. Kenneth B. Raper 157-198
*Cupressus*—
canker of, induced by *Coryneum cardinale* n. sp. Willis W. Wagener 1-46
spp., susceptibility to canker disease, experiments 34-39
*See also* Cypress.
Cuprous oxide, diluted and undiluted, efficacy in destroying saprophytes on germinating seed peas, tests 405, 419-420
CUTLER, G. H., and WORZELLA, W. W.: A Critical Study of Technique for Measuring Granulation in Wheat Meal 329-341
Cypress—
bark moth, spread of canker disease 25-26
canker—
causal fungus, studies 8-27
natural hosts, distribution, and damage 6-8
Monterey—
canker disease—
control problem 40-42
description 1-6
pathological features 27-34
possible origins 39-40
inoculation with *Coryneum cardinale* n. sp., results 34-39
reactions to invasion by *Coryneum cardinale* n. sp 30-31
See also *Cupressus*.

Dairy cows, lactating, carotene balance and blood-carotene levels and their relation to production of off-flavor milk. C. H. Whitnah, W. J. Peterson, F. W. Atkeson, and H. W. Cave 343-355

*Daucus carota*— Page
hypocotyl and roots—
anatomy. Leon Havis 557-564
ontogeny 560-563
seedling—
anatomy 558-560
gross morphology 558
DENNHARDT, LOIS, and FLETCHER, HAZEL: Adequacy of Labeling of Certain Textile Fabrics With Regard to Fiber Content 895-903
*Dictyostelium discoideum*, growth and development—
influence of culture conditions. Kenneth B. Raper 157-198
influence of hydrogen-ion concentration 170-188, 189-192
on Endo's and allied media 160-163, 191-192
on peptone-sugar media 165-170, 190-195
DIEHL, WILLIAM W.: Identity and Parasitism of a Species of *Dothichloë* 947-954
Diets deficient in vitamin $B_1$, feeding to White Leghorn and Rhode Island Red chicks, experiments 308-316
Dip treatment, effect on seed peas for elimination of saprophytes during germination, tests 413-419
*Dothichloë*—
cause of sterility of certain grasses 947
*limitata* n. sp.—
pathological considerations 950-954
synonyms, identity 949-950
synonymy and technical description 948
taxonomy 948-950
sp., geographic distribution 947
sp., identity and parasitism. William W. Diehl 947-954
DOWDEN, PHILIP B.: *Schizonotus sieboldi*, an Important Parasite of the Imported Willow Leaf Beetle (*Plagiodera versicolora*) 581-592
Dropseed, mesa, carotene content, monthly variation 695-699
Drying, effect on causal agent of tobacco root rot, experiments 850-852
Dust—
New Ceresan, efficacy in elimination of saprophytes from germinating seed peas, tests 401, 405, 407, 408, 411-420
protectants, comparison with copper and zinc fungicides in elimination of saprophytes on germinating seed peas, tests 411-413
DUSTMAN, R. B., and WEAKLEY, CHAS E., Jr.: Bilateral Variation in the Weight and Composition of the Long Bones of Some Experimental Animals 711-719
Dwarfing of cucurbits sprayed with bordeaux mixture. James G. Horsfall, G. E. R. Hervey, and R. F. Suit 911-927
Dyes, aniline—
certain bactericidal efficiency. F. W. Tilley 941-946
in aqueous solutions, effect on microorganisms, studies 941-945

*Eberthella typhi*, susceptibility to aniline dyes, bactericidal tests 941-946
Egg—
growth, relation to clutch position 887-890
laying, rate, differences, physiological basis, study 875-893
production of turkeys during different parts of first laying year, relative influence of various factors affecting. V. S. Asmundson 747-754
size, differences, physiological basis, study 875-893
weight and shell characters—
correlation coefficients for White Leghorns 390-391
statistical constants for White Leghorns 388-390
yolk—
secretion, study 878-885, 887
size, relation to growth of hen's ovum 885-887
Eggs, clutch position, effect on eggshell characters 392-393

Eggshell— Page
characters—
and egg weight, correlation coefficients for White Leghorns 390-391
and egg weight, statistical constants 388-390
determination method 385
effect of clutch position 392-393
thickness, inheritance—
in White Leghorn pullets. Lewis W. Taylor and I. Michael Lerner 383-396
statistical methods of analysis 385-387
Environment, modification of flower structure in varieties of *Lycopersicum esculentum*. Freeman S. Howlett 79-117
*Eragrostis refracta*, susceptibility to *Dothichloë* infection 951-954
*Escherichia coli*, susceptibility to aniline dyes, bactericidal tests 941-946
Ethyl mercury phosphate, efficacy in destroying saprophytes on seed peas, germination tests 400-402
EZELL, BOYCE D., and GERHARDT, FISK: A Method of Estimating the Volatile Products Liberated From Stored Fruit 493-503

Fabrics—
fiber composition, identification and analysis, methods 896-900
textile, certain, adequacy of labeling with regard to fiber content. Hazel Fletcher and Lois Dennhardt 895-903
Farm wastes, fuel gas production from, effect of temperature of digestion, chemical composition and size of particles on. G. H. Nelson, Robert P. Straka, and Max Levine 273-287
FELLOWS, HURLEY, and FICKE, C. H.: Soil Infestation by *Ophiobolus graminis* and Its Spread 505-519
Fertilizer—
content of soils, relation to toxicity of chemical herbicides 637-671
treatment of corn, examination by foliar diagnosis 478-491
Fertilizers, effect on shape of beet roots, studies 739-740
Fescue, bluebunch—
calcium-phosphorus ratio 611, 613, 615
composition, seasonal variation. Ralph McCall 603-616
four-year average composition, analyses 612-613, 614
inorganic nutrients, seasonal variation 610-615
organic nutrients, seasonal variation 605-610, 612-614
seasonal average composition, analyses 613, 614
Fiber content, certain textile fabrics, adequacy of labeling with regard to. Hazel Fletcher and Lois Dennhardt 895-903
FICKE, C. H., and FELLOWS, HURLEY: Soil Infestation by *Ophiobolus graminis* and Its Spread 505-519
Filter paper, gas production from, by anaerobic microbial decomposition 273-276, 277-280, 283-286
FINEMAN, Z. M., KRANTZ, F. A., and BECKER, CATHARINE L.: Incidence and Inheritance of Pollen Sterility in the Potato 503-601
Flax, seed, straw, gas production from, decomposition by anaerobic microbial decomposition, experiments 273-280, 282, 283-286
FLETCHER, HAZEL, and DENNHARDT, LOIS: Adequacy of Labeling of Certain Textile Fabrics With Regard to Fiber Content 895-903
Flower structure in *Lycopersicum esculentum* varieties, modification by environment. Freeman S. Howlett 79-117
Foliar diagnosis—
of *Zea mays* subjected to differential fertilizer treatment. Walter Thomas and Warren B. Mack 477-491
study of influence of calcium from two sources, lime and superphosphate. Walter Thomas and Warren B. Mack 685-693

Forest— Page
floor of chaparral in San Gabriel Mountains—
amount in dry weight per acre 524-527
California. Joseph Kittredge, Jr 521-535
coverage and depth and crown density 523-524
depth of water retained 531-533
field moisture capacity 529-531
volume weight 527-529
litter, annual accumulation and creep and other surface materials in chaparral of San Gabriel Mountains, Calif. Joseph Kittredge, Jr 537-541
Fowl, breed differences in resistance to a deficiency of vitamin $B_1$ in. W. F. Lamoreux and F. B. Hutt 307-316
Fowls—
breed differences in—
resistance to vitamin $B_1$ deficiency when fed normal diets, experiments 312-313
susceptibility to vitamin $B_1$ deficiency and independence of body size 313-316
breeds resistant and susceptible to vitamin $B_1$ deficiency, crossing experiments 314-316
mortality, relation to vitamin $B_1$ deficiency in different breeds when fed normal diets, experiments 312-313, 314-316
*See also* Hen; Pullets.
FREY, R. W., CLARKE, I. D., and HYLAND, H. L.: Seasonal Variation in Tannin Content of *Lespedeza sericea* 131-139
Fruit—
stored, volatile products liberated from, estimation method. Fisk Gerhardt and Boyce D. Ezell 493-503
volatile emanations, oxidizing solution and substrate, selection and standardization 495-496
Fuel gas, production from farm wastes, effect of temperature of digestion, chemical composition, and size of particles on. G. H. Nelson, Robert P. Straka, and Max Levine 273-287
Fungi, elimination from germinating seed peas, experiments 400-422
Fungicides, efficacy in elimination of saprophytes from seed peas during germination, tests 400-422
*Fusarium*—
*vasinfectum*, cause of wilt disease of cotton 47
wilt of cotton, relation to soil moisture. W. H. Tharp and V. H. Young 47-61

Gas, fuel, production from farm wastes, effect of temperature of digestion, chemical composition, and size of particles on. G. H. Nelson, Robert P. Straka, and Max Levine 273-287
Genetics of male sterility in tomato 625-630
GERHARDT, FISK, and EZELL, BOYCE D.: A Method of Estimating the Volatile Products Liberated From Stored Fruit 493-503
Germination—
laboratory, of seed peas, chemical elimination of saprophytes during. Willard Crosier and Stewart Patrick 397-422
of hop seeds, influence of moisture and low temperature on. D. C. Smith 369-381
Gilliflower. *See* Stock, annual.
Goats, experimental trichostrongylosis in. John S. Andrews 761-770
GODFREY, ALBERT B., HENDRICKS, WALTER A., and QUINN, JOSEPH P.: Interpretation of Mendelian Class Frequencies 755-760
*Gossypium*—
American species—
cultivated, hybrids of, chromosome behavior 252
wild, hybrids of, chromosome behavior 249-252
Asiatic species, hybrids of, chromosome behavior 246-249
chromosome—
complements, genetical nature 252-253
morphology 239-244, 252-253
cytogenetics, history 238-239

*Gossypium*—Continued. Page
genus—
relationships as indicated by cytological data. J. M. Webber ... 237–261
subdivisions ... 237–238
interspecific hybrids—
and phylogeny ... 253–255
chromosome behavior ... 244–252, 253–255
phylogenetic conceptions, studies ... 255–258
*See also* Cotton.
*Gossypium armourianum*—
characters and morphology ... 446–447, 452–453
leaf anatomy ... 453–454, 457, 457–458
× *Gossypium thurberi*—
leaf anatomy ... 454–458
morphology ... 445–459
segregation of characters in $F_2$ ... 447–453
*Gossypium stuartii*—
chromosome behavior ... 244–245
relationships, cytological data ... 257–259
*Gossypium thurberi*—
characters and morphology ... 446–447, 452–453
leaf anatomy ... 453–454, 455, 457–458
Grama, black, carotene content, monthly variation ... 695–699
Granulation in wheat meal, measuring technique, critical study. W. W. Worzella and G. H. Cutler ... 329–341
Granulometer, description and use with wheat meal ... 331–332
Grasses—
nutrients, organic and inorganic, seasonal variation ... 603–605
range, two important, *Sporobolus flexuosus* and *Bouteloua eriopoda*, carotene content, monthly variation ... 695–699
*See also* under specific names.
GRAVES, R. R., and SWETT, W. W.: Relation Between Conformation and Anatomy of Cows of Unknown Producing Ability ... 199–235

HALVERSON, J. O., and SHERWOOD, F. W.: The Vitamin G Content of Some Oil Press-Cake Meals and Related Products ... 787–794
HAMILTON, J., SMITH, C. L., THOR, C. J. B., and ROMBERG, L. D.: Root Composition and Top Development in Large Pecan Trees Headed to Various Degrees of Severity in Top Working ... 821–842
HARRISON, A. L., and HORSFALL, JAMES G.: Effect of Bordeaux Mixture and Its Various Elements on Transpiration ... 423–443
HASTINGS, E. G., and BEACH, B. A.: A Further Study of the Production of Milk of Abnormal Composition by Cows Free From Udder Streptococci ... 543–556
HAVIS, LEON: Anatomy of the Hypocotyl and Roots of *Daucus carota* ... 557–564
Hay—
alfalfa—
and timothy in combination, feeding to growing lambs, experiments ... 149–155
feeding to growing lambs, experiments ... 149–155
timothy, feeding to growing lambs, experiments ... 149–155
Heifer, dairy, long bones, weight and composition, bilateral variation ... 711–716
Heifers, carotene balance and blood-carotene levels and their relation to production of off-flavor milk. C. H. Whitnah, W. J. Peterson, F. W. Atkeson, and H. W. Cave ... 343–355
*Helminthosporium* spp., elimination from germinating seed peas, tests ... 400–422
Hemicellulose, content of pecan roots, effect of heading, experiments ... 832
Hen—
laying rate, physiological basis ... 887
ovum of, growth. D. C. Warren and R. M. Conrad ... 875–893
*See also* Fowl; Pullets.
HENDRICKS, WALTER A., QUINN, JOSEPH P., and GODFREY, ALBERT B.: Interpretation of Mendelian Class Frequencies ... 755–760
HENNING, WILLIAM LEWIS: Prenatal and Postnatal Sex Ratio in Sheep ... 565–580
Hens—
feeding for yolk formation, experiments ... 890–892
White Leghorn, inheritance of eggshell thickness, experiments ... 383–396

Page
Herbicides, chemical toxicity, relation of soil nutrients to, experiments ... 637–671
HERVEY, G. E. R., HORSFALL, JAMES G., and SUIT, R. F.: Dwarfing of Cucurbits Sprayed With Bordeaux Mixture ... 911–927
*Heterodera marioni*, cause of bean root knot ... 263
Hog blood, contaminated, use for testing bactericidal efficiency of aniline dyes ... 945–946
Hop seeds, germination—
in greenhouse and coldframes, comparison ... 377–378, 379, 380
influence of moisture and low temperature. D. C. Smith ... 369–381
stimulation of, effect of natural conditions ... 378–379
HORSFALL, JAMES G.—
and HARRISON, A. L.: Effect of Bordeaux Mixture and Its Various Elements on Transpiration ... 423–443
HERVEY, G. E. R., and SUIT, R. F.: Dwarfing of Cucurbits Sprayed With Bordeaux Mixture ... 911–927
HOWLETT, FREEMAN S.: The Modification of Flower Structure by Environment in Varieties of *Lycopersicum esculentum* ... 79–117
HUTT, F. B., and LAMOREUX, W. F.: Breed Differences in Resistance to a Deficiency of Vitamin $B_1$ in the Fowl ... 307–316
Hybridization in *Lactuca* spp., experiments ... 299–306
Hydrogen-ion concentration—
influence on development of *Dictyostelium discoideum* ... 170–188, 189–195
of bordeaux mixture—
effect on transpiration, studies ... 433–434
relation to dwarfing of cucurbits ... 921–924
HYLAND, H. L., CLARKE, I. D., and FREY, R. W.: Seasonal Variation in Tannin Content of *Lespedeza sericea* ... 131–139

Inheritance of—
eggshell thickness in White Leghorn pullets. Lewis W. Taylor and I. Michael Lerner ... 383–396
multiple birth tendencies in sheep, studies ... 575–576
pollen sterility in the potato. F. A. Krantz, Catharine L. Becker, and Z. M. Fineman ... 593–601
Insecticides, effect on growth of cucurbits ... 919, 924, 925

JAGGER, I. C., and WHITAKER, THOMAS W.: Cytogenetic Observations in *Lactuca* ... 297–306
JENKINS, WILBERT A.: The Development of *Mycosphaerella berkeleyii* ... 617–620
JOHNSON, D. W., and PALMER, L. S.: Individual and Breed Variations in Pigs on Rations Devoid of Vitamin D ... 929–939
JOHNSON, JAMES: Studies on the Nature of Brown Root Rot of Tobacco and Other Plants ... 843–863

Kamala, effect on egg size and yolk growth in hens ... 892
KEARNEY, THOMAS H., and WEBBER, IRMA E.: Morphology of Two American Wild Species of Cotton and of Their Hybrid ... 445–459
KITTREDGE, JOSEPH, JR.:
The Annual Accumulation and Creep of Litter and Other Surface Materials in the Chaparral of the San Gabriel Mountains, Calif ... 537–541
The Forest Floor of the Chaparral in San Gabriel Mountains, Calif ... 521–535
KRANTZ, F. A., BECKER, CATHARINE L., and FINEMAN, Z. M.: Incidence and Inheritance of Pollen Sterility in the Potato ... 593–601

*Lactuca*—
cytogenetic observations. Thomas W. Whitaker and I. C. Jagger ... 297–306
hybrids, chromosome numbers in, effect on progeny, studies ... 299–306
spp., meiosis, survey ... 297–303
Lambing records, sex-ratio data, Pennsylvania Experiment Station ... 567–568, 571–576

Page

Lambs—
growing, relative efficiency of the protein in rations containing alfalfa hay, timothy hay, and combinations of the two hays. J. I. Miller and F. B. Morrison. 149–155
infestation by *Trichostrongylus* spp., studies 761–769
nutrition experiments 149–155
LAMOREUX, W. F., and HUTT, F. B.: Breed Differences in Resistance to a Deficiency of Vitamin $B_1$ in the Fowl 307–316
LERNER, I. MICHAEL, and TAYLOR, LEWIS W.: Inheritance of Eggshell Thickness in White Leghorn Pullets 383–396
LESLEY, J. W., and LESLEY, MARGARET: Unfruitfulness in the Tomato Caused by Male Sterility 621–630
LESLEY, MARGARET, and LESLEY, J. W.: Unfruitfulness in the Tomato Caused by Male Sterility 621–630
*Lespedeza sericea*, tannin content—
analyses, methods and results 134–137
qualitative examination 133–134
seasonal variation. I. D. Clarke, R. W. Frey, and H. L. Hyland 131–139
Lettuce. *See Lactuca.*
LEVINE, MAX, NELSON, G. H., and STRAKA, ROBERT P.: Effect of Temperature of Digestion, Chemical Composition, and Size of Particles on Production of Fuel Gas From Farm Wastes 273–287
Light, effect on causal agent of tobacco brown root rot 852–855
Lignin, corncob, gas production from, by anaerobic microbial decomposition, experiments 273–277, 283
Lime—
absorption by corn plant, effects of fertilizer treatment 484–485
calcium from, influence, foliar diagnosis study. Walter Thomas and Warren B. Mack 685–693
effect on growth of cucurbits 915–926
in bordeaux mixtures, effect on bean and tomato transpiration, studies 431–432, 433–435, 441
Linen fabrics, labeling for fiber content, analyses 896–902
Linseed meal, vitamin G content, studies 787–794
Litter, annual accumulation and creep in chaparral of San Gabriel Mountains, Calif. Joseph Kittredge, Jr. 537–541
*Lycopersicum esculentum*—
flower structure, factors affecting, experiments 79–115
varieties of, flower structure, modification by environment. Freeman S. Howlett 79–117
*See also* Tomato.

MACK, WARREN B., and THOMAS, WALTER: A Foliar Diagnosis Study of the Influence of Calcium From Two Sources, Lime and Superphosphate 685–693
The Foliar Diagnosis of *Zea mays* Subjected to Differential Fertilizer Treatment 477–491
Magnesia, absorption by corn plant, effects of fertilizer treatment 484–485
Magnesium absorption by corn plant, effect of fertilizer treatment 484–485
MAHONEY, CHARLES H., and BATEN, W. D.: The Use of the Analysis of Covariance and Its Limitation in the Adjustment of Yields Based Upon Stand Irregularities 317–328
Maize—
nutrition, foliar diagnosis study 685–693
plants, foliar diagnosis study of influence of calcium from lime and superphosphate 685–693
Male sterility in tomato, effect of unfruitfulness. J. W. Lesley and Margaret Lesley 621–630
MARCO, HERBERT F.: The Anatomy of Spruce Needles 357–368
Mastitis, bovine—
outbreak in Beltsville herd, studies 141–143
*Pseudomonas aeruginosa* in. J. Frank Cone 141–147
MATTHEWS, E. D., RENEGER, C. A., and THOMAS, R. P.: Soil Studies on the Causes of the Brown Root Rot of Tobacco 673–684

Page

MCCALL, RALPH: Seasonal Variation in the Composition of Bluebunch Fescue 603–616
MCFADDEN, E. S.: Brown Necrosis, a Discoloration Associated With Rust Infection in Certain Rust-Resistant Wheats 805–819
Meal granulation—
nature, discussion 33
numerical expression 334
Meals—
oil press-cake, vitamin G content. F. W. Sherwood and J. O. Halverson 787–794
*See also* under specific kinds.
Meiosis, in *Lactuca* of varied chromosome numbers, studies 299–306
Melons, dwarfing, effects of bordeaux sprays 911–926
Mendelian class frequencies, interpretation. Walter A. Hendricks, Joseph P. Quinn, and Albert B. Godfrey 755–760
Mercurials, volatile, efficacy in destroying saprophytes germinating on seed peas, tests 399, 400–404, 419–420
Mercury compounds, inorganic, efficacy in destroying saprophytes on germinating seed peas, tests 399, 414–417, 419–420
Mesa drop seed, carotene content, monthly variation 695–699
Methane, production from farm wastes, experiments 273–286
Micro-organisms—
elimination from germinating seed peas, chemical control studies 398–422
susceptibility to aniline dyes, tests 941–946
MIDDLETON, J. T., TOMPKINS, C. M., ARK, P. A., and TUCKER, C. M.: Soft Rot of Pumpkin and Watermelon Fruits Caused by *Pythium ultimum* 461–475
Milk—
of abnormal composition, production by cows free from udder streptococci, further study. E. G. Hastings and B. A. Beach 543–556
off-flavor, production, relation to carotene balance and blood-carotene levels in heifers and lactating dairy cows. C. H. Whitnah, W. J. Peterson, F. W. Atkeson, and H. W. Cave 343–355
MILLER, J. I., and MORRISON, F. B.: Relative Efficiency for Growing Lambs of the Protein in Rations Containing Alfalfa Hay, Timothy Hay, and Combinations of the Two Hays 149–155
Moisture—
influence on germination of hop seeds. D. C. Smith 369–381
relation to growth of cotton root-rot fungus. C. H. Rogers 701–709
MORRISON, F. B., and MILLER, J. I.: Relative Efficiency for Growing Lambs of the Protein in Rations Containing Alfalfa Hay, Timothy Hay, and Combinations of the Two Hays 149–155
Mosaic—
disease of radish in California. C. M. Tompkins 119–130
diseases, two, of annual stock. C. M. Tompkins 63–77
viruses of annual stock—
description 74–75
host range 68–73
Muskmelons, dwarfing, effect of bordeaux sprays 911–926
*Mycosphaerella berkeleyii*—
development. Wilbert A. Jenkins 617–620
maturation, description 619–620
perithecia, development 618, 620
spermatization, process 618–619, 620
spermogonia, development 617, 620

Necrosis, brown, discoloration associated with rust infection in certain rust-resistant wheats. E. S. McFadden 805–819
NELSON, G. H., STRAKA, ROBERT P., and LEVINE, MAX: Effect of Temperature of Digestion, Chemical Composition, and Size of Particles on Production of Fuel Gas From Farm Wastes 273–287
Nematode infestation of bean varieties, study 263–271
Nematodes, infestation of sheep, studies 761–769, 771–783

Page

Nitrate content of soils, relation to toxicity of chemical herbicides ... 639-671
Nitrogen—
balance experiments with growing lambs ... 149-155
content of pecan roots, effect of heading, experiments ... 832-833, 836, 839-840
effect on *Aspergillus niger*, growth curves ... 722-723, 726-728, 730
partition in cultures of *Aspergillus niger* ... 724-725
treatment of corn, examination by foliar diagnosis ... 478-482, 484-490
utilization by *Aspergillus niger*, estimation by optimum solutions as physiological reference standards. Robert A. Steinberg and John D. Bowling ... 717-732
Nutrient solutions, optimum, as physiological reference standards in estimating nitrogen utilization by *Aspergillus niger* ... 717-731
Nutrients—
inorganic, in bluebunch fescue, seasonal variation ... 610-611
relation to toxicity of arsenic, borax, and chlorate in soils. A. S. Crafts ... 637-671
Nutrition—
lambs, experiments ... 149-155
maize, foliar diagnosis study ... 685-693
pigs, vitamin D relationships, studies ... 929-939

Oil press-cake meals—
related products of, vitamin G content. F. W. Sherwood and J. O. Halverson ... 787-794
vitamin G content. F. W. Sherwood and J. O. Halverson ... 787-794
*Ophiobolus graminis*, infestation—
of soil, and spread. Hurley Fellows and C. H. Ficke ... 505-519
of soil by means of cultures on organic media ... 516
Organic material, accumulation and creep in chaparral of San Gabriel Mountains, Calif. ... 537-541
Orthocresol, influence on bactericidal efficiencies of dyes ... 943-944
Ovulation in hens, effect on egg size, studies ... 875-893
Ovum, of hen—
early growth, data ... 882-883
growth—
D. C. Warren and R. M. Conrad ... 875-893
late stages, data ... 883-885
relation to yolk size ... 885-887
normal growth, data ... 880-882
structure and yolk secretions, studies ... 878-880

Palmer, L. S., and Johnson, D. W.: Individual and Breed Variations in Pigs on Rations Devoid of Vitamin D ... 929-939
Parasitism, facultative, explanation ... 681-682
Patrick, Stewart, and Crosier, Willard: Chemical Elimination of Saprophytes During Laboratory Germination of Seed Peas ... 397-422
Peanut meal, vitamin G content, studies ... 787-794
Pearson, Norma L.: Relation of the Structure of the Chalazal Portion of the Cotton Seed Coat to Rupture During Ginning ... 865-873
Peas—
canning, skins of, calcium-phosphorus ratio and its relation to maturity. Donald W. Bolin and Wilbur Schroeder ... 631-636
seed—
dip treatment for elimination of saprophytes during germination, tests ... 413, 419-420
laboratory germination, chemical elimination of saprophytes during. Willard Crosier and Stewart Patrick ... 397-422
Pecan—
fruit development, prefilling period, physiological study. C. J. B. Thor and C. L. Smith ... 905-910
fruits, composition throughout prefilling period, analyses ... 906-909
trees—
growth, effect of heading, experiments ... 835-836, 840
heading, effect on root composition and top development, experiments ... 821-841
large, headed to various degrees of severity in top working, root composition and top development. C. L. Smith, J. Hamilton, C. J. B. Thor, and L. D. Romberg ... 821-842

Pecan—Continued. Page
trees—Continued.
top working, effect on root composition and top development, experiments ... 821-841
*Penicillium* spp., elimination from germinating seed peas, tests ... 401-422
Pennsylvania Agricultural Experiment Station, Jordan fertility experimental plots ... 478-490
Peterson, W. J., Whitnah, C. H., Atkeson, F. W., and Cave, H. W.: Carotene Balance and Blood-Carotene Levels in Heifers and Lactating Dairy Cows, and Their Relation to the Production of Off-Flavor Milk ... 343-355
Phenol, influence on bactericidal efficiencies of dyes ... 943-944
Phosphate content of soils, relation to toxicity of chemical herbicides ... 640-671
Phosphoric acid treatment of corn, examination by foliar diagnosis ... 478-482, 483-484, 485-490
Phosphorus—
calcium ratio of skins of canning peas and its relation to maturity. Donald W. Bolin and Wilbur Schroeder ... 631-636
content of pigs' blood, relation to vitamin D intake, experiments ... 929-939
*Phymatotrichum omnivorum*, growth, effect of moisture and temperature ... 701-708
Pigs—
individual and breed variations, on rations devoid of vitamin D. D. W. Johnson and L. S. Palmer ... 929-939
vitamin D requirements, experiments ... 931-939
*Plagiodera versicolora*—
life cycle ... 582
willow leaf beetle, imported, important parasite of, *Schizonotus sieboldi*. Philip B. Dowden ... 581-592
Plants—
hosts of two mosaic viruses of annual stock, experiments ... 68-73
susceptible—
and immune to brown root rot, list ... 857
to *Pythium ultimum*, list ... 461
to radish mosaic infection, inoculation and symptoms ... 122-126
*Pleurotropis tarsalis*, parasitism on *Schizonotus* or *Tetrastichus* pupae ... 591, 592
Pollen—
of male-fertile tomato plants, characteristics ... 622-625
of male-sterile tomato plants, characteristics ... 622-625
sterility in the potato, incidence and inheritance. F. A. Krantz, Catharine L. Becker, and Z. M. Fineman ... 593-601
Pollination of male-fertile and sterile tomato plants, studies ... 621-630
Potash—
content of soils, relation to toxicity of chemical herbicides ... 639-671
treatment of corn, examination by foliar diagnosis ... 478-482, 484, 485-490
Potassium, reciprocal effects with calcium on maize ... 692
Potato—
hybrids, pollen sterility, inheritance studies ... 597-600
pollen—
sterility in, incidence and inheritance. F. A. Krantz, Catharine L. Becker, and Z. M. Fineman ... 593-601
viability, effect on seedling populations ... 593-596
seedling populations, condition with respect to pollen viability ... 593-596
Poultry—
crossing between thick- and thin-shelled lines, results ... 393-394
genetics, reporting data ... 759
*See also* Fowl; Hens; Pullets; Turkeys.
Protein—
in rations containing alfalfa hay, timothy hay, and combinations of the two hays, relative efficiency for growing lambs. J. I. Miller and F. B. Morrison ... 149-155
nutritive value in rations fed to growing lambs, comparative studies ... 149-155

Page

*Pseudomonas aeruginosa*—
cause of mastitis in cows, studies ..... 141–146
characteristics in culture ..... 143–145
in bovine mastitis. J. Frank Cone ..... 141–147
Pullets—
White Leghorn, inheritance of eggshell thickness. Lewis W. Taylor and I. Michael Lerner ..... 383–396
*See also* Fowl; Hen.
Pumpkin fruits, soft rot of, caused by *Pythium ultimum*. C. M. Tompkins, P. A. Ark, C. M. Tucker, and J. T. Middleton .. 461–475
Pyrethrum—
inactivation after ingestion by southern armyworm and during incubation with its tissues. P. A. Woke ..... 289–295
inefficacy as stomach poison, experiments 289–294
toxic principles, inactivation by isolated tissues of southern armyworm larvae, experiments ..... 291–294
*Pythium ultimum*—
cause of soft rot of pumpkin and watermelon fruits. C. M. Tompkins, P. A. Ark, C. M. Tucker, and J. T. Middleton 461–475
experimental host range ..... 472
morphology ..... 463–468
pathogenicity ..... 470–472
susceptibility of certain plants to ..... 462
temperature relations ..... 468–469

QUINN, JOSEPH P., HENDRICKS, WALTER A., and GODFREY, ALBERT B.: Interpretation of Mendelian Class Frequencies .. 755–760

Radish, mosaic—
disease—
in California. C. M. Tompkins ..... 119–130
symptoms ..... 120
virus—
comparison with other crucifer viruses .. 127–129
description ..... 127
experimental host range ..... 122–126
properties ..... 126–127
transmission, studies ..... 120–122
RAPER, KENNETH B.: Influence of Culture Conditions Upon the Growth and Development of *Dictyostelium discoideum* .... 157–198
Rat, long bones, weight and composition, bilateral variation ..... 711–716
Rations—
absence of vitamin D, individual and breed variations in pigs. D. W. Johnson and L. S. Palmer ..... 929–939
containing alfalfa hay, timothy hay, and combinations of the two hays, protein in, relative efficiency for growing lambs. J. I. Miller and F. B. Morrison ..... 149–155
Rayon fabrics, labeling for fiber content, analyses ..... 896–902
RENEGER, C. A., MATTHEWS, E. D., and THOMAS, R. P.: Soil Studies on the Causes of the Brown Root Rot of Tobacco ..... 673–684
*Rhizopus nigricans*, elimination from germinating seed peas, tests ..... 401–422
Riboflavin content of oil press-cake meals .. 787–794
Rickets in pigs, cause and prevention, experiments ..... 929–939
ROGERS, C. H.: The Relation of Moisture and Temperature to Growth of the Cotton Root Rot Fungus ..... 701–709
ROMBERG, L. D., SMITH, C. L., HAMILTON, J., and THOR, C. J. B.: Root Composition and Top Development in Large Pecan Trees Headed to Various Degrees of Severity in Top Working ..... 821–842
Root—
knot resistance, nature of, studies. Keith C. Barrons ..... 263–271
primordia in 1-year apple roots, anatomical studies. E. A. Siegler and J. J. Bowman ..... 795–803
rot—
brown, of tobacco and other plants, nature of, studies. James Johnson ..... 843–863
brown, of tobacco, causes, soil studies. E. D. Matthews, C. A. Reneger, and R. P. Thomas ..... 673–684

Root—Continued. Page
rot—Continued.
of cotton, fungus, growth, effect of moisture and temperature. C. H. Rogers. 701–709
*See also* specific host.
Roots, of beets, shape, influence of various factors. Ross C. Thompson ..... 733–745
Rust infection in certain rust-resistant wheats, brown necrosis associated with. E. S. McFadden ..... 805–819

*Salmonella*—
*pullorum*, susceptibility to aniline dyes, bactericidal tests ..... 941–946
*suipestifer*, susceptibility to aniline dyes, bactericidal tests ..... 941–946
San Gabriel Mountains, California—
chaparral, annual accumulation and creep of litter and other surface materials. Joseph Kittredge, Jr. ..... 537–541
forest floor of chaparral. Joseph Kittredge, Jr. ..... 521–535
Saprophytes, chemical elimination during laboratory germination of seed peas. Willard Crosier and Stewart Patrick ..... 397–422
*Schizonotus sieboldi*—
biology and habits, description ..... 588–590
distribution and host relationships ..... 581–582
economic importance ..... 582–585
important parasite of the imported willow leaf beetle (*Plagiodera versicolora*). Philip B. Dowden ..... 581–592
life history ..... 585–588
superparasitism and secondary parasitism. 590–591
SCHROEDER, WILBUR, and BOLIN, DONALD W.: The Calcium-Phosphorus Ratio of the Skins of Canning Peas and Its Relation to Maturity ..... 631–636
*Sclerotium bataticola*—
cause of brown root rot of tobacco ..... 675–682, 683
description ..... 675
inoculation tests ..... 676–680
isolation from tobacco ..... 675
response to different environmental conditions ..... 675–676, 681
Sex—
determination in mammals, discussion ..... 565
ratio, prenatal and postnatal, in sheep. William Lewis Henning ..... 565–580
Sheep—
acquired resistance to superinfection with *Cooperia curticei*, development ..... 778–782
experimental trichostrongylosis in. John S. Andrews ..... 761–770
fetuses—
mortality, sex-ratio relationships ..... 574–575
sex ratio, studies ..... 570–575
multiple births, frequency of sex combinations, studies ..... 575–576
registered, sex ratios by, flock-book records ..... 568, 575–576
resistance to *Cooperia curticei*, development. John S. Andrews ..... 771–785
sex ratio in, prenatal and postnatal. William Lewis Henning ..... 565–580
SHERWOOD, F. W., and HALVERSON, J. O.: The Vitamin G Content of Some Oil Press-Cake Meals and Related Products ..... 787–794
SIEGLER, E. A., and BOWMAN, J. J.: Anatomical Studies of Root and Shoot Primordia in 1-Year Apple Roots ..... 795–803
Silk fabrics, labeling for fiber content, analyses ..... 896–902
Slime mold, growth and development, influence of culture conditions upon, experiments ..... 157–197
SMITH, C. L.:
and THOR, C. J. B.: A Psychological Study of the Prefilling Period of Fruit Development in the Pecan ..... 905–910
HAMILTON, J., THOR, C. J. B., and ROMBERG, L. D.: Root Composition and Top Development in Large Pecan Trees Headed to Various Degrees of Severity in Top Working ..... 821–842
SMITH, D. C.: Influence of Moisture and Low Temperature on the Germination of Hop Seeds ..... 369–381

Page

Sodium—
arsenite, toxicity in soils, relation of nutrients to, experiments ..... 639-640, 644-649, 654-655
borate, toxicity in soils, relation of nutrients to, experiments ..... 639-640, 649-653
chlorate, toxicity in soils, relation of nutrients to, experiments ..... 639-644, 655-670
Soft rot—
caused by *Pythium ultimum*, symptoms ..... 463
of pumpkin and watermelon fruits, caused by *Pythium ultimum*. C. M. Tompkins, P. A. Ark, C. M. Tucker, and J. T. Middleton ..... 461-475
Soil—
amoeboid organism in, growth and behavior, influence of culture conditions ..... 157-197
fertility, relation to toxicity, factors affecting ..... 637-671
infestation by *Ophiobolus graminis* and its spread. Hurley Fellows and C. H. Ficke ..... 505-519
moisture—
effect on growth of cotton root rot fungus, studies ..... 704-705
relation of fusarium wilt of cotton to. W. H. Tharp and V. H. Young ..... 47-61
studies on causes of brown root rot of tobacco. E. D. Mathews, C. A. Reneger, and R. P. Thomas ..... 673-684
texture, effect on shape of beet roots, studies ..... 739
Soils, nutrients, relation to toxicity of arsenic, borax, and chlorate. A. S. Crafts ..... 637-671
Solutions, optimum, as physiological reference standards in estimating nitrogen utilization by *Aspergillus niger*. Robert A. Steinberg and John D. Bowling ..... 717-732
Soybean meal, vitamin G content, studies ..... 787-794
*Sporobolus*—
*flexuosus*, important range grass, carotene content, monthly variation. W. E. Watkins ..... 695-699
*poiretii*, susceptibility to *Dothichloë* infection ..... 951-954
Spray—
load, effect on dwarfing of cucurbits ..... 919-921
solutions, effect on growth of cucurbits ..... 910-926
Spraying, cucurbits, with bordeaux mixture, dwarfing effect. James G. Horsfall, G. E. R. Hervey, and R. F. Suit ..... 911-927
Spruce needles—
anatomy. Herbert F. Marco ..... 357-368
endodermis, anatomy ..... 363-364
epidermis, and hypodermis, anatomy ..... 358-360
mesophyll, anatomy ..... 362-363
resin canals, anatomy ..... 361-362
stomata, anatomy ..... 360-361
tissues, functions ..... 365-366
vascular tissue, anatomy ..... 364-365
Stand irregularities, yield adjustment based upon use of analysis of covariance and its limitation in. Charles A. Mahoney and W. D. Baten ..... 317-328
*Staphylococcus aureus*, susceptibility to aniline dyes, bactericidal tests ..... 941-946
Starch content of pecan roots, determination ..... 825-826, 829-832, 836-839
STEINBERG, ROBERT A., and BOWLING, JOHN D.: Optimum Solutions as Physiological Reference Standards in Estimating Nitrogen Utilization by *Aspergillus niger* ..... 717-732
Sterility—
male, in tomato, cause of unfruitfulness. J. W. Lesley and Margaret Lesley ..... 621-630
of potato pollen, incidence and inheritance. F. A. Krantz, Catharine L. Becker, and Z. M. Fineman ..... 593-601
Stock, annual—
mosaic diseases—
distribution and economic importance ..... 64
symptoms ..... 64-66
mosaic viruses—
host range, experiments ..... 68-73
properties and description ..... 73-75
relation to other crucifer viruses ..... 75
transmission ..... 67-68
two mosaic diseases. C. M. Tompkins ..... 63-77

Page

STRAKA, ROBERT P., NELSON, G. H., and LEVINE, MAX: Effect of Temperature of Digestion, Chemical Composition, and Size of Particles on Production of Fuel Gas From Farm Wastes ..... 273-287
Streptococci, udder, cows free from, production of milk of abnormal composition, further study. E. G. Hastings and B. A. Beach ..... 543-556
Sugar beets—
planting date, effect on shape of roots, studies ..... 740-741, 744
root shapes, factors affecting, studies ..... 733-745
Sugar content of pecan roots, determination ..... 825, 826-829, 839
SUIT, R. F., HORSFALL, JAMES G., and HERVEY, G. E. R.: Dwarfing of Cucurbits Sprayed With Bordeaux Mixture ..... 911-927
Sulphuric acid, use in absorption of acetaldehyde by stored fruits ..... 498-499
Superphosphate calcium from, influence, foliar diagnosis, study. Walter Thomas and Warren B. Mack ..... 685-693
SWETT, W. W., and GRAVES, R. R.: Relation Between Conformation and Anatomy of Cows of Unknown Producing Ability ..... 199-235
Swine, long bones, weight and composition, bilateral variation ..... 711-716

Take-all—
disease. *See* under host.
fungus, infestation of soil, methods of spread ..... 506-519
Tannin content, of *Lespedeza sericea*, seasonal variation. I. D. Clarke, R. W. Frey, and H. L. Hyland ..... 131-139
TAYLOR, LEWIS W., and LERNER, I. MICHAEL: Inheritance of Eggshell Thickness in White Leghorn Pullets ..... 383-396
Temperature—
effect on—
causal agent of brown root rot of tobacco, experiments ..... 848-850, 861
growth of *Pythium ultimum*, experiments ..... 468-469
low, influence on germination of hop seeds. D. C. Smith ..... 369-381
of digestion, effect on fuel gas production from farm wastes. G. H. Nelson, Robert P. Straka, and Max Levine ..... 273-287
relation to growth of cotton root rot fungus. C. H. Rogers ..... 701-709
Temperatures—
effect on growth of *Coryneum cardinale*, n. sp ..... 15-19
soil, influence on relation of soil moisture to fusarium wilt of cotton, study ..... 47-61
*Tetrastichus* n. sp., parasitism on *Schizonotus* larvae and pupae ..... 591, 592
Textile fabrics, certain, adequacy of labeling with regard to fiber content. Hazel Fletcher and Lois Dennhardt ..... 895-903
Textiles, fiber content, rulings ..... 895-896
THARP, W. H., and YOUNG, V. H.: Relation of Soil Moisture to Fusarium Wilt of Cotton ..... 47-61
THOMAS, R. P., MATTHEWS, E. D., and RENEGER, C. A.: Soil Studies on the Causes of the Brown Root Rot of Tobacco ..... 673-684
THOMAS, WALTER, and MACK, WARREN B.: A Foliar Diagnosis Study of the Influence of Calcium From Two Sources, Lime and Superphosphate ..... 685-693
The Foliar Diagnosis of *Zea mays* Subjected to Differential Fertilizer Treatment ..... 477-491
THOMPSON, ROSS C.: Influence of Various Factors on the Shape of Beet Roots ..... 733-745
THOR, C. J. B., and SMITH, C. L.:
A Physiological Study of the Prefilling Period of Fruit Development in the Pecan ..... 905-910
HAMILTON, J., and ROMBERG, L. D.: Root Composition and Top Development in Large Pecan Trees Headed to Various Degrees of Severity in Top Working ..... 821-842

Page

TILLEY, F. W.: Bactericidal Efficiency of Certain Aniline Dyes ... 941-946
Timothy hay, feeding to growing lambs ... 149-155
Tobacco—
  brown root rot—
    causal agent, factors affecting ... 845-856
    causes, soil studies. E. D. Matthews, C. A. Reneger, and R. P. Thomas ... 673-684
    isolated organism—
      description ... 675
      inoculation tests ... 676-680
      response to different environmental conditions ... 675-676, 681
    nature of, studies. James Johnson ... 843-863
    pathological histology ... 858-860, 861
    susceptibility of plant species to, experiments ... 856-858
  susceptibility to brown root rot, soil studies ... 673-683
Tomato—
  Blair Forcing, flower structure, variations, studies ... 84-92, 106-114
  Bonny Best, flower structure, variations, study ... 92-93, 106-114
  Break O'Day, flower structure, variations, study ... 93-94, 106-114
  Earliana, flower structure, variations, study ... 94-96, 106-114
  flower, structure—
    description ... 79
    modification, studies ... 79-115
  Globe, flower structure, variations, study ... 96, 106-114
  Greater Baltimore, flower structure, variations, study ... 96-97, 106-114
  Lorillard, flower structure, variations, study ... 97, 106-114
  male sterility, genetics ... 625-630
  Marhio, flower structure, variations, study ... 97-98, 106-114
  plants—
    pollen characteristics ... 622-625
    transpiration, effect of bordeaux mixture on, greenhouse experiments ... 423-442
  Ponderosa, flower structure, variations, study ... 98-114
  roots, infection with brown root rot of tobacco, studies ... 845-862
  unfruitfulness—
    caused by male sterility. J. W. Lesley and Margaret Lesley ... 621-630
    origin and cause ... 621-622
  See also *Lycopersicum esculentum*.
Tomatoes—
  English varieties, flower structure, comparisons with American varieties ... 101-106
  yields, study by analysis of covariance ... 324-326
TOMPKINS, C. M.:
  A Mosaic Disease of Radish in California ... 119-130
  Two Mosaic Diseases of Annual Stock ... 63-77
ARK, P. A., TUCKER, C. M., and MIDDLETON, J. T.: Soft Rot of Pumpkin and Watermelon Fruits Caused by *Pythium ultimum* ... 461-475
Transpiration—
  bordeaux mixture, hypothesis ... 440-441
  effect of bordeaux mixture and its various elements on. James G. Horsfall and A. L. Harrison ... 423-443
  in leaves of bean and tomato plants, effect of bordeaux mixture on, greenhouse investigations ... 425-440
Trichostrongylosis, experimental, in sheep and goats. John S. Andrews ... 761-770
*Trichostrongylus* spp., infestation of sheep and goats, studies ... 761-769
TUCKER, C. M., TOMPKINS, C. M., ARK, P. A., and MIDDLETON, J. T.: Soft Rot of Pumpkin and Watermelon Fruits Caused by *Pythium ultimum* ... 461-475
Turkeys—
  egg production, relative influence of various factors affecting during different parts of first laying year. V. S. Asmundson ... 747-754
  *See also* Poultry.

Page

Udder streptococci, cows free from, production of milk of abnormal composition, further study. E. G. Hastings and B. A. Beach ... 543-556
Unfruitfulness, in tomato, caused by male sterility. J. W. Lesley and Margaret Lesley ... 621-630

Vegetable crops, yields, analysis of covariance, use and limitation ... 317-328
Vitamin $B_1$, deficiency in fowl, breed differences in, resistance to. W. F. Lamoreux and F. B. Hutt ... 307-316
Vitamin D, absence in rations, effect on individual and breed variations in pigs. D. W. Johnson and L. S. Palmer ... 929-939
Vitamin G content of some oil press-cake meals and related products. F. W. Sherwood and J. O. Halverson ... 787-794

WAGENER, WILLIS W.: The Canker of *Cupressus* Induced by *Coryneum cardinale* n. sp. ... 1-46
WARREN, D. C., and CONRAD, R. M.: Growth of the Hen's Ovum ... 875-893
Wastes, farm, fuel gas production from, effect of temperature of digestion, chemical composition, and size of particles on. G. H. Nelson, Robert P. Straka, and Max Levine ... 273-287
Watermelon fruits, soft rot of, caused by *Pythium ultimum*. C. M. Tompkins, P. A. Ark, C. M. Tucker, and J. T. Middleton ... 461-475
WATKINS, W. E.: Monthly Variation in Carotene Content of Two Important Range Grasses, *Sporobolus flexuosus* and *Bouteloua eriopoda* ... 695-699
WEAKLEY, CHAS. E., Jr., and DUSTMAN, R. B.: Bilateral Variation in the Weight and Composition of the Long Bones of Some Experimental Animals ... 711-716
Weather, effect on bordeaux transpiration in beans ... 425-429
WEBBER, IRMA E., and KEARNEY, THOMAS H.: Morphology of Two American Wild Species of Cotton and of Their Hybrid ... 445-459
WEBBER, J. M.: Relationships in the Genus *Gossypium* as Indicated by Cytological Data ... 237-261
Wheat—
  brown necrosis—
    description ... 806-807
    development, relation to stem rust infection, observations ... 811-813
    early observations and experiments ... 807
    experimental production ... 807-811
    indication of mature-plant resistance to ... 816
  meal—
    granulation, measurement technique, critical study. W. W. Worzella and G. H. Cutler ... 329-341
    granulation, variation between tests, determinations ... 334-335
    grinding, experiments ... 337, 339-340
    sieve sets, variation among ... 335
  moisture content, effect on granulation of meal, determination ... 338, 340
  plant, root, spread of *Ophiobolus graminis* infestation, experiments ... 512-516
  rust-resistant—
    in field plots, observations on brown necrosis ... 813
    in nursery plots, observations on brown necrosis ... 811-813
    inoculation with stem rust, experiments ... 807-811
    varieties, reaction to stem rust ... 815-816
  stage of development at time of inoculation with rust, relation to brown necrosis development ... 813-814
  straw, gas production from, by anaerobic microbial decomposition, experiments ... 273-280, 282, 283-286
  take-all disease—
    severity rating ... 506
    spread, experiments ... 506-519

| | Page |
|---|---|
| Wheats, rust resistance, association of brown necrosis with. E. S. McFadden | 805-819 |
| WHITAKER, THOMAS W., and JAGGER, I. C.: Cytogenetic Observations in *Lactuca* | 297-306 |
| WHITNAH, C. H., PETERSON, W. J., ATKESON, F. W., and CAVE, H. W.: Carotene Balance and Blood-Carotene Levels in Heifers and Lactating Dairy Cows and Their Relation to the Production of Off-Flavor Milk | 343-355 |
| Willow leaf beetle, imported (*Plagiodera versicolora*), an important parasite of, *Schizonotus sieboldi*. Philip B. Dowden | 581-592 |
| Wilt, fusarium, of cotton, relation to soil moisture. W. H. Tharp and V. H. Young | 47-61 |
| WOKE, P. A.: Inactivation of Pyrethrum After Ingestion by the Southern Armyworm and During Incubation With Its Tissues | 289-295 |
| Wool fabrics, labeling for fiber content, analyses | 896-902 |
| WORZELLA, W. W., and CUTLER, G. H.: A Critical Study of Technique for Measuring Granulation in Wheat Meal | 329-341 |
| Yeast, dried brewer's, vitamin G content, comparison with that of meals | 787-794 |
| YOUNG, V. H., and THARP, W. H.: Relation of Soil Moisture to Fusarium Wilt of Cotton | 47-61 |
| *Zea mays*, foliar diagnosis when subjected to differential fertilizer treatment. Walter Thomas and Warren B. Mack | 477-491 |
| Zinc compounds, efficacy in destroying saprophytes on germinating seed peas, tests | 399, 409-412, 419 |